Claims

1. A kneading device which kneads a raw material of high viscosity and a raw material of low viscosity and continuously delivers a raw material mixture obtained, comprising:

a casing;

a pair of screw shafts disposed parallel to each other in said casing; and,

a driving unit for rotating said screw shafts, wherein

a helical portion is formed at one end of said pair of screw shafts so that said raw material is conveyed from one end of each of said pair of screw shafts to the other end, and

a plurality of mixing pins is provided with the other end side of said screw shaft with regard to said helical portion in the circumferential direction of said screw shaft.

2. A kneading device according to claim 1, wherein each member of said pair of screw shafts is configured so as to rotate inwardly from top to bottom.

3. A kneading device according to claim 1, wherein a mixing pin is provided at the inside of said casing.

4. A kneading device according to claim 2, wherein

the plurality of mixing pins provided with said pair of screw shafts is arranged at a height so that they overlap with each other between said pair of screw shafts in such a manner that they do not interfere with each other.

5. A kneading device according to claim 4, wherein

an overlapping portion of the mixing pins between said pair of screw shafts is equal to

or less than a half of the height of the mixing pin.

6. A kneading device according to claim 1, wherein

said plurality of mixing pins are formed in a flat plate shape and are obliquely disposed with respect to a rotation axis of said screw shaft so that the surfaces of said mixing pins facing the other end of said screw shaft face the rotation direction of said screw shaft.

7. A kneading device according to claim 1, wherein

an introduction opening for the raw material having high viscosity and an introduction opening for the raw material having low viscosity towards said pair of screw shafts are provided separately.

8. A kneading device according to claim 1, wherein

an outlet for discharging the raw material mixture is provided with said casing at a position below the other end of said screw shaft, and a wiping plate for wiping off the raw material mixture, which is conveyed by said screw shafts, to said outlet is provided with said casing at a position corresponding to the other end of said screw shafts.

9. A kneading device according to claim 1, wherein

a cover for sealing the inside of said casing is provided with said casing so that 5 - 50% of the inside volume of the sealed space is empty.

10. A kneading device which kneads a main raw material of high viscosity and a secondary raw material of liquid or powder and continuously delivers a kneaded raw material obtained, comprising:

a casing having an opened upper portion;

a pair of mixing blades disposed parallel to each other in said casing; and,

a driving unit for rotating said mixing blades, wherein

each of said pair of mixing blades comprises a unit blade of a U-shape continuously attached in a wavy shape, and said pair of the mixing blades rotate with their rotational phases shifted so that they do not interfere with each other.

11. A kneading device according to claim 10, wherein each of said pair of mixing blades is configured so as to rotate inwardly from top to bottom.

12. A kneading device according to claim 10, wherein

an inclined portion facing the other end of said mixing blades is provided with the surface of said mixing blades facing the rotation direction thereof so that said raw materials may be conveyed from one end of said mixing blades to the other end thereof.

13. A kneading device according to claim 12, further comprising:

an inclination member for changing the angle of inclination of said inclined portion which is detachably attached to said inclined portion.

14. A ropesizer, comprising:

a sheet forming unit for elongating a first raw material into a sheet shape;

a delivering unit which applies a second raw material onto the first raw material, which is elongated in sheet shape and conveyed by said sheet forming unit, so as to be in a strand form; and,

a wrapping means for wrapping the sheet shape first raw material, while the sheet

shape first raw material is being conveyed, so as to wrap the second raw material, which is applied as a strand form, in the first raw material.

15. A ropesizer according to claim 14, further comprising:

an elongation unit which elongates an intermediate product having a large diameter, which is obtained by wrapping the second raw material in the first raw material by said wrapping means, and produces an intermediate product having a smaller diameter.

16. A ropesizer according to claim 14, wherein

said delivering unit comprises a plurality of cone members arranged with their cone points pointing downwardly so as to be a side surface of a cone, each of said cone members rotating in the same direction around the central axis thereof as a rotation axis as well as rotating in the circumferential direction of the side surface of said cone around the central axis of said cone as a rotation axis so that the second raw material supplied to the inside of said cone is discharged from the bottom portion thereof in a strand form.

17. A ropesizer according to claim 15, wherein

said elongation unit is provided with a conveyance passage which conveys said intermediate product having a smaller diameter in a free state without elongating said intermediate product in order to achieve stress relaxation in said intermediate product being elongated.